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Micrometrical Measures of Double Stars. By the Rev. T. E. R. Phillips, M.A.

The stars of Struve's *Mensuræ Micrometricæ* in the following list have been measured with the 8-inch Coleman refractor kindly lent by the Council of the Society. The Herschel stars have been measured with the 12¼-inch reflector.

The magnitudes of the Struve pairs have been taken from vol. lvi of the Memoirs of the society, and those of the Herschel pairs are the means of estimates by the observer.

In the last column, A = H. F. Acocks, P = T. E. R. Phillips.

Star.	1910. R.A.	1910. Dec.	Mags.	Position Angle.	Dist.	No. of Nts.	Date.	Obs.
Σ	h m	° ′		°	″		1912	
42	0 31·2	+29 30	7·9, 8·7	28·5	5·79	3	·784	P.
60 (η Cassiopeiæ)	0 43·6	57 20	4·0, 7·6	246·7	6·41	3	·771	P.
61 (65 Piscium)	0 45·0	27 13	6·0, 6·0	117·2	4·46	3	·768	P.
73 (36 Androm.)	0 50·8	23 8	6·2, 6·8	37·0	1·09	3	·730	P.
82	0 55·9	9 1	8·3, 9·3	305·5	1·72	3	·772	P.
87	1 10·7	14 58	8·0, 8·5	199·3	6·35	3	·791	P.
				197·5	6·39	2	·809	A.
113	1 15·2	− 0 59	6·2, 7·2	357·1	1·53	3	·735	P.
130	1 27·8	+69 27	8·0, 9·0	186·9	7·56	3	·733	P.
138	1 31·3	7 11	7·3, 7·3	41·9	1·44	3	·739	P.
155	1 39·4	9 0	7·5, 7·9	327·1	4·78	3	·742	P.
174	1 45·1	21 50	6·2, 7·4	166·2	2·76	3	·744	P.
178	1 47·3	10 22	7·8, 7·8	199·7	3·16	3	·750	P.
180 (γ Arietis)	1 48·5	18 51	4·2, 4·4	359·1	8·14	3	·684	P.
				357·9	8·16	4	·694	A.
186	1 51·2	1 24	7·2, 7·2	38·7	0·90	3	·757	P.
194	1 54·2	24 23	8·0, 8·3	268·8	1·12	3	·751	P.
202 (α Piscium)	1 57·4	2 19	2·8, 3·9	314·4	2·86	3	·744	P.
205 (γ Andromedæ A and B)	1 58·4	41 54	2·5, 5·5	63·1	9·91	3	·747	P.
224	2 6·0	13 15	7·5, 8·0	243·4	5·53	3	·757	P.
291	2 36·0	18 25	7·4, 7·7	118·0	3·47	3	·757	P.
305	2 42·4	18 50	7·3, 8·2	315·4	3·32	4	·762	P.
311 (π Arietis)	2 44·2	17 7	4·9, 8·4	117·7	3·36	3	·773	P.
323	2 47·9	6 5	8·0, 8·0	278·6	2·74	3	·795	P.
333 (ε Arietis)	2 54·1	20 58	5·7, 6·0	203·6	1·36	3	·689	P.
				203·9	1·45	3	·705	A.
334	2 54·6	6 17	7·7, 8·2	316·0	1·32	3	·806	P.
376	3 15·3	19 24	7·9, 8·0	251·5	7·00	3	·830	P.
377	3 15·5	18 50	8·3, 8·7	113·9	1·01	3	·830	P.

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Star.	1910.		Mags.	Position Angle.	Dist.	No. of Nts.	Date.	Obs.
	R.A.	Dec.						
Σ	h m	° ′		°	″		1912	
381	3 18·1	20 39	7·0, 8·7	98·4	0·99	3	·830	P.
422	3 32·2	0 18	6·0, 8·2	251·6	6·31	3	·730	P.
460	3 54·9	80 28	5·2, 6·1	58·3	0·97	3	·854	P.
470 (32 Eridani)	3 49·8	− 3 13	4·0, 6·0	347·1	6·69	3	·730	P.
491	4 0·9	+10 41	8·2, 8·8	104·0	2·67	3	·826	P.
572	4 32·9	26 46	6·5, 6·5	201·3	3·71	4	·864	P.
652	5 7·1	0 56	6·3, 7·8	181·6	1·74	3	·889	P.
654	5 8·6	2 46	4·8, 8·5	63·0	6·86	3	·932	P.
664	5 10·3	9 1	7·5, 8·0	169·7	4·71	3	·932	P.
665	5 10·4	19 39	8·3, 9·2	251·5	1·41	3	·892	P.
712	5 21·8	2 52	7·0, 9·0	55·0	3·05	3	·929	P.
729	5 26·5	3 13	6·0, 7·3	28·5	2·03	3	·912	P.
730	5 27·0	17 0	6·5, 7·0	140·1	9·74	3	·916	P.
738 (λ Orionis)	5 30·1	9 52	4·0, 6·0	42·9	4·25	3	·912	P.
742	5 31·0	21 56	7·2, 8·2	261·3	3·54	3	·909	P.
2272 (70 Ophiuchi)	18 1·0	2 32	4·5, 6·0	147·3	4·04	3	·457	P.
				148·4	4·01	3	·491	A.
2276	18 1·5	12 0	6·0, 7·0	257·4	6·76	3	·468	P.
				257·9	6·57	3	·492	A.
2289	18 6·1	16 29	6·0, 7·1	229·1	1·19	3	·584	P.
2316 (59 Serpentis)	18 23·2	0 8	5·5, 7·8	317·6	3·94	3	·584	P.
2319	18 23·8	19 14	7·2, 7·7	191·6	5·32	3	·619	P.
2404	18 46·5	10 51	5·8, 7·0	180·3	3·61	3	·473	A.
				182·0	3·54	3	·473	P.
2449	19 2·0	7 0	7·1, 7·8	290·9	7·613	3	·562	A.
2455	19 3·0	22 2	7·2, 8·3	67·4	3·68	3	·478	P.
				68·8	3·72	3	·482	A.
2583 (π Aquilæ)	19 44·4	11 35	6·1, 6·7	111·3	1·52	3	·496	A.
				114·3	1·59	3	·520	P.
2613	19 57·1	10 30	7·0, 7·2	350·4	4·47	3	·527	A.
2621	20 0·2	8 59	7·7, 7·9	223·9	5·72	3	·620	P.
				224·3	5·77	3	·647	A.
2654	20 10·5	− 3 47	6·2, 7·7	235·0	14·07	3	·549	A.
2690 (15 Delphini A and $\frac{BC}{2}$)	20 26·9	+10 57	7·0, 7·5	256·6	15·62	3	·612	A.
2695	20 28·1	25 30	6·8, 8·0	79·4	1·19	3	·584	P.
2698	20 30·0	27 49	8·1, 9·0	304·7	4·55	4	·834	P.
2701	20 32·7	11 44	7·8, 8·2	220·8	2·23	3	·597	P.
2765	21 6·5	9 11	7·8, 8·0	84·0	2·97	3	·593	P.
				84·2	3·19	3	·755	A.

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Star.	1910. R.A.	1910. Dec.	Mags.	Position Angle.	Dist.	No. of Nts.	Date.	Obs.
Σ	h m	° ′		°	″		1912	
2799	21 24·5	10 42	8·5, 8·5	291·5	1·52	3	·671	P.
2804	21 28·8	20 19	7·3, 8·0	336·6	3·03	3	·671	P.
				335·7	2·96	3	·671	A.
2878	22 10·0	7 32	6·5, 8·0	125·5	1·29	3	·601	P.
2908	22 23·8	16 48	7·0, 8·7	113·5	9·15	3	·685	P.
				113·6	8·74	3	·701	A.
2909 (ζ Aquarii)	22 24·2	− 0 29	4·0, 4·1	309·7	2·81	5	·624	P.
				307·9	3·16	3	·699	A.
3000	23 14·3	+24 43	8·7, 8·8	52·6	3·34	3	·710	P.
3012	23 23·0	16 8	8·7, 8·8	189·4	2·95	3	·712	P.
3013	23 23·1	16 8	7·8, 9·3	272·2	2·82	3	·712	P.
3014	23 23·4	10 38	8·1, 10·4	278·7	8·22	3	·678	P.
				278·5	8·01	3	·694	A.
3019	23 26·1	4 45	7·1, 8·1	185·4	10·73	3	·719	P.
3041	23 43·2	16 34	7·3, 8·1	178·6	3·25	3	·721	P.
3050	23 54·6	33 13	6·0, 6·0	221·1	2·19	3	·727	P.
3061	0 1·1	17 20	8·0, 8·0	146·8	7·66	3	·733	P.
				147·5	7·34	2	·756	A.
h								
1313	18 2·8	28 42	9, 11·5	307·9	15·16	4	·416	P.
1315	18 6·4	29 39	10·5, 12·3	130·5	9·01	3	·352	P.
1317	18 13·5	27 21	9·8, 11·3	129·1	18·19	4	·432	P.
1318	18 15·6	28 6	10·6, 11·1	138·1	11·54	4	·360	P.
1322	18 19·5	27 44	9·5, 10·2	242·3	20·14	5	·635	P.
1324	18 23·0	28 38	9·5, 10·5	14·9	6·35	4	·437	P.
1343	18 42·3	27 13	9·8, 11·5	117·5	7·86	5	·513	P.
1343 (Star 1′·3 *sf*)			11, 11·5	129·2	13·57	3	·455	P.
1355	18 50·5	27 11	10, 10·5	33·7	13·24	4	·758	P.
1388	19 18·0	30 0	8·6, 11·0	212·9	20·81	3	·773	P.
1450	19 50·0	30 2	10·5, 10·5	251·1	9·45	5	·794	P.

Notes.

Σ 2722. Now widening rapidly.

Σ 2909. Angle diminishing much more rapidly than formerly. About 10° in last 10 years.

h 1313. Angle about 14° less than that given by *h*.

h 1318. *h* makes magnitudes of stars equal.

h 1322. *h* makes 2 magnitudes difference between stars.

h 1355. Angle about 19° greater than that given by *h*.

The places of the Herschel pairs in the above list are those given by *h* corrected for precession, but the identifications in some instances appear doubtful.

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New Double Stars. By Rev. T. E. Espin, M.A.

No.	B.D.		R.A. 1900. h	m	Decl. °	′	P. °	D. ″	Mags.		Nights.	Date. 1912.	
1126	+47°	12	0	4·3	+47	25	320·4	6·12	9·0	9·7	3	·918	
1127	+47°	18		5·8	47	47	298·6	1·98	10·0	10·7	3	·945	BC
							0·9	89·32	A=	9·2	3	·945	AB
1128	+49°	98		23·3	50	7	172·7	4·17	9·5	11·7	2	·832	
1129	+48°	152		25·4	48	44	84·7	1·45	9·3	9·4	3	·987	
1130	+49°	342	1	11·4	49	27	361·7	3·20	9·3	11·6	3	·796	
1131	+48°	458		26·4	49	0	317·8	3·57	9·5	10·2	3	·918	
1132	+48°	495		33·1	48	30	182·4	5·95	9·3	11·7	2	·898	
1133	+49°	725	2	31·6	49	49	293·3	3·26	9·3	10·3	4	·221	
1134	+49°	751		36·2	49	38	362·3	4·83	9·0	11·7	3	·292	
1135	+49°	768		43·8	48	39	40·2	4·22	9·5	9·7	2	·809	
1136	+48°	923	3	21·4	48	36	9·6	6·68	9·3	11·6	3	·066	
1137	+49°	1038		43·8	49	22	75·9	1·18	9·5	9·8	4	·111	
1138	+49°	1279	4	50·4	49	19	339·9	5·60	9·5	9·6	3	·077	
1139	+49°	1284		52·7	49	21	109·4	2·00	9·2	9·4	4	·130	AB
							343·1	7·75	C=	13·5	3	·117	AC
1140	+48°	1259	5	15·1	48	16	286·7	2·87	9·4	10·3	2	·167	
1141	+48°	1290		29·6	48	10	267·9	3·39	9·1	9·6	3	·182	
1142	+49°	1567	6	47·1	49	52	278·7	3·01	9·5	12·0	2	·174	
1143	+48°	1553	7	29·9	48	16	277·9	4·55	9·0	12·0	2	·194	
1144	+46°	1356	8	0·9	46	29	337·8	7·63	9·0	9·2	3	·244	
1145	+46°	1358		1·9	46	15	77·7	6·38	9·5	10·2	3	·277	AB
							245·3	14·15	C=	13·5	2	·272	AC
1146	+46°	1447		44·6	46	32	165·6	6·22	9·4	11·9	3	·252	
1147	+45°	1682	9	1·4	45	35	179·5	7·20	8·9	9·0	2	·254	AB
							272·3	31·70	C=	10·2	2	·254	AC
1148	+45°	1702		12·3	45	4	31·0	6·03	8·8	9·6	4	·261	
1149	+47°	1740		58·7	47	3	249·8	7·92	8·6	12·0	3	·261	
1150	+46°	1634	10	24·2	46	3	306·5	2·74	9·3	10·8	4	·277	
1151	+44°	1992		24·8	44	45	301·2	2·80	9·5	9·6	3	·287	
1152	+45°	1845		31·0	45	35	348·5	3·57	9·3	9·4	2	·267	
1153	+44°	2112	11	33·2	44	39	263·1	5·42	8·9	11·5	3	·315	
1154	+44°	2142		48·2	43	50	337·2	3·23	9·6	9·9	3	·314	
1155	+45°	2029	12	18·9	45	14	194·8	3·93	9·8	10·7	3	·296	
1156	+45°	2152	14	0·7	45	37	264·9	2·48	9·6	9·6	3	·337	
1157	+46°	2428	18	4·2	46	46	16·2	4·47	9·8	10·5	3	·796	BC
							180·8	25·93	A=	7·8	3	·796	AB
1158	+47°	2612		16·6	47	21	198·1	4·92	8·0	11·5	3	·796	
1159	+46°	2521		35·8	46	55	254·0	3·57	9·1	10·8	3	·809	AB
							336·1	18·87	C=	10·3	2	·800	AC
1160	+46°	2522		36·1	46	53	1·9	1·86	9·5	11·5	5	·819	
1161	+47°	2688		42·7	47	40	269·5	3·72	9·2	9·4	2	·717	
1162			19	9·5	47	2	91·0	2·37	9·6	10·5	3	·777	